

PATENT SPECIFICATION

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COMPLETE SPECIFICATION

Improvements in or relating to Load Platforms for the Transport of Goods

We, JOHN REGINALD SHARP, a British Subject and EMMANUEL KAYE, a British Subject, both of Kingsclere Road, Basingstoke, Hampshire, do hereby declare the invention, for which we pray that a patent may be granted to us and the method by which it is to be performed to be particularly described in and by the following statement:—

This invention relates to an apparatus which may be described as a crate, of the known type comprising a platform, a cover and self contained tension means for drawing the cover toward the platform so as to clamp goods between the cover and the platform. Such a device is described in British Patents Nos. 288020 and 3406/04 and is to be distinguished from other known devices in which a cover is used to clamp goods by the action of a crane or the like in lifting a platform. The latter devices are also well known and are exemplified in British Patent No. 362741, but in this case the means for applying tension to draw the cover toward the platform is not self contained and clamping pressure depends upon the employment of lifting tackle.

In the known crates of the type first described, to which this invention relates the cover, is liable when many crates and perhaps other gear are in use, to become separated from its platform and to lead to confusion.

It is an object of the invention to provide means for rapidly and safely packing goods for transport which will save the provision of crates, will readily co-operate with fork-lifting trucks and can be used over and over again.

The present invention provides a goods-handling crate of the type described wherein the tension means for clamping goods between cover and platform are secured to both cover and platform so as to prevent accidental detachment of the cover from the platform.

A further feature of the invention relates to the fact that the cover may be provided with means to support another platform so that a

number of platforms, when loaded with goods fastened down by the covers, can be stood one on top of another.

The following is a description by way of example of certain constructions in accordance with the invention:—

In the accompanying drawings.

Figure 1 is a perspective view of a platform in accordance with the invention when loaded with goods,

Figure 2 is a vertical section through a platform as shown in Figure 1, indicating also the manner in which such platforms can be stacked when loaded, one upon another, and the manner in which the parts fit together when unloaded,

Figure 3 is a perspective view of the platform when unloaded and packed for shipment empty; in Figure 3 the line 2—2 indicates the plane of the section on which Figure 2 is taken,

Figure 4 is a perspective view of a winch forming part of the apparatus of Figures 1—3,

Figure 5 is a vertical section through the winch shown in Figure 4, and

Figure 6 is a perspective view of an alternative winch.

Referring to Figures 1—3, a platform 11 is provided by forming a frame of steel angle-members 12, 13 welded together at the corners, each with one flange of the angle upright and the other flange horizontal and directed inwards. Across the frame from side to side at intervals there are welded cross-members 14 (Figure 2) which rest on the horizontal flanges of the angles 12. The cross-members 14 may be made from T-iron. Further angle-members 15 are welded inside the angle-members 13 so that their upper surfaces are level with the upper surfaces of the cross-members 14. Over these cross-members or bearers 14 and 15, there is welded a sheet metal floor 16, the upper surface of which is on a lower level than the edges of the peripheral frame.

Below the frame there are secured two runners 17, 18. Each runner is made of a piece of flat-section steel which is bent up at the ends and is long enough for the bent up ends to be welded to the underside of the members 12 of the frame of the platform. The horizontal portion of the runner between the bent up ends may, if desired, be stiffened by creasing the runner upwards in the centre. It is further stiffened by a support 19 in the centre extending from the underside of the platform to the upper surface of the runner 17 or 18, as the case may be. This support 19 consists of a vertical piece of steel sheet. Additional supports may be provided in the form of webs 20, 21 near each end of the runner, the webs extending from the underside of the platform to the upper side of the runner. It will be observed that by the described construction there is a space between the runner and the underside of the platform, divided into two on each side by the central support 19. This space is made large enough to accommodate the fork-arms of a fork-lifting-truck. The fork of the lifting-truck may also be entered beneath the platform from the ends, that is to say between the runners longitudinally. Thus this construction affords what is known as "four-way entry."

The platform is intended primarily for the carriage of ammunition boxes and is made of such dimensions as to accommodate four rows of three boxes each, side by side, as shown at 23, Figure 1. On these boxes there may be stacked a second tier 24 of four rows of three boxes and above this a third tier 25.

If ammunition boxes or other goods are stowed on such a platform, in order to prevent displacement during transit, a cover 26 is provided above the goods. This cover consists of a light frame made of angle-shaped members 27, 28 with a narrow horizontal flange projecting inwardly all round the frame and a deep peripheral flange projecting downwardly. The frame is made of such dimensions as to embrace and fit upon the upper tier 25 of boxes. In Figures 2 and 3, the platform is shown unloaded with the upper cover 26 resting upon the platform-proper 11, but in Figure 2 the position occupied by the cover and by the tiers of boxes upon the platform is shown in chain lines. Within the frame from side to side there extend three cross-members 29, 30, 31. Each cross-member is made of sheet metal—the side edges of which are bent upwardly to stiffen it. The two outer cross-members 29, 31, are set at such a distance apart from one another that if a second platform is loaded on to them the cross-members 29, 31 of the cover of the lower platform will fit below and be suitable to receive and support the runners 17, 18 of the upper platform as seen in the lower part of Figure 2, where the cover of the lower platform is shown in chain lines. At four

points, two along each of the two opposite edges, there are welded to the frame of the cover metal eyes 32, 33 which are large enough to embrace the hooks of a crane-sling. These eyes can conveniently be formed by welding to the frame inverted U-shaped pieces of steel bar.

Outside the frame 26 at each end there are welded fittings 34 for the attachment of wire cables 35, intended to draw the cover down on the goods supported by the platform. The platform 11 also has fittings 36, 37 for the passage of each of the cables and the principle is to thread the wire cable up and down around the fittings between the cover and the platform and then to tighten it so as to draw the cover downwards by means of some form of winding-up gear (it will be understood that a chain or other flexible tension member could be used instead of the cable). To this end on one end of the cover there is secured the aforesaid fixture 34 to receive one end of the wire cable 35. Below it on the platform there is a guide or bollard 36 round which the cable from the fixture on the cover can be led. A second bollard 37 near the opposite end of the same side of the platform is provided and the cable is led round this up to a bollard 38 on the cover and thence horizontally to a winding-up apparatus or winch 40 located on the middle of the side 28 of the cover. Between the two bollards 36, 37 on the platform the cable passes through an eye 38 made by welding a U-shaped piece of metal to the upright flange of the angle-iron 12 of the platform. The end of the cable which enters the winch 40 is provided with a ball or head 41 (Figure 4) to fit into a recess provided for it on a small winch drum 42. Therefore after the cable has been threaded round the bollards the head 41 on the cable can be inserted into the winch drum 42 after which, if the winch is operated, the cable 35 is tightened and the cover 26 drawn down firmly upon the goods on the platform. An exactly similar cable gear is provided at the other end of the cover on the platform and by tightening the two winches the whole is rapidly and firmly secured together. It should be pointed out that to release the goods all that is necessary is to unwind the cable from the winch and detach the head 41 on the cable from the winch drum. This head is made large enough to prevent it passing through the eye 38 on the platform 11 between the bollards and therefore the cover 26, although loose and easily lifted off the goods on the platform 11, is still attached to the platform by the cable 35 and cannot be lost.

Various constructions of winch can be provided. In the form shown in Figures 4 and 5, the winch drum 42 is integral with a head 43, drilled with peripheral holes 44 to receive a tommy-bar 45, by which the winch can be rotated. The winch drum 42 with the head

43 and tommy-bar 45 is mounted so as to be axially moveable relatively to the frame member 28 which carries it. This is effected by welding a boss 46 into the frame 28 which boss affords a bearing for an axle 47 secured in the drum 42. The axle 47 is urged inwardly by a spring 48. The boss 46 carries crown ratchet teeth 49 and the winch 42 carries inserted pawl members 50 to engage diametrically opposite teeth on the ratchet. When tightening the cable 35, the drum 42 and its pawl members 50 move endwise and slip over the ratchet teeth 49. The winch can be disengaged by pulling it axially outwards. As can readily be seen in Figure 4 the head 41 on the cable 35 can be inserted in and moved from the winch by passing it through a slot 51 in the head 43 of the drum 42 and the recess which has been referred to in the winch drum is constituted partly by the sides of the slots 51 and partly by a recess in the flange of the winch drum which lies opposite to the slot 51.

Referring to Figure 6, in this case there is a winch drum, the sides of which are constituted by two ratchet wheels 52, 53 with peripheral teeth. The drum has a head 43 to a tommy-bar 45 as before. A pawl 54 pivoted on a bolt 55 engages the ratchet teeth of the wheels 52, 53. This pawl is pressed toward the teeth by a spring 56 and it carries a striking plate 57, pressure on which will serve to withdraw it from the ratchet teeth. The striking plate can be struck with a hammer or any convenient weight which makes it easy to release it under service conditions. The importance of this is very great because it is necessary to be able to release the pawl without special tools even should it become jammed. The ratchet parts are supported by and also protected from damage by a stout bracket member 58 welded to the side of the frame member 28 and surrounding the winch drum.

When a pile of ammunition boxes has been unloaded from a platform such as that just described it is desirable to be able with convenience to return the platform and cover to base. The construction described lends itself readily to this. As already pointed out, the cover cannot become detached from the platform as the cables are fastened at each end, one end to the platform and the other end to the cover. It is, however, undesirable to have platforms and covers riding loose when empty. With the construction described, however, all that is necessary is to place the cover directly on the platform and wind the cable in place, taking two turns round each bollard instead of one, and then tightening up again by the winch, as shown in Figure 3.

The skids 17, 18 are made broad enough to support the platform effectively, even on solid ground and loose sand and they facilitate hauling it about on the ground under such conditions.

What we claim is:—

1. A goods-handling crate of the type described wherein the tension means for clamping goods between cover and platform are secured to both cover and platform so as to prevent accidental detachment of the cover from the platform. 70

2. A good handling apparatus as claimed in claim 1, wherein the tension means consist of cables or chains and means for applying tension comprising a winch on the platform or cover. 75

3. A goods handling apparatus as claimed in claim 1 and claim 2, wherein the cover is provided with means to support another platform so that a number of platforms, when loaded with goods fastened down by the covers can be stood one on top of another. 80

4. A goods handling apparatus as claimed in claim 1 or claim 2 or claim 3, wherein the platform and its cover are made of light-section metal members welded together at their junctions with one another. 85

5. A goods handling apparatus as claimed in any one of the preceding claims wherein means are provided to support the platform clear of the ground consisting of skids secured to the underside thereof. 90

6. A goods handling apparatus as claimed in claim 5 wherein the skids take the form of runners which are connected to the platform at their ends and centre but are spaced therefrom between the ends and centre sufficiently to permit the entry of fork members of a fork truck. 95

7. A goods handling apparatus as claimed in claim 2 or claim 3 appended to claim 2, wherein the winch drum is axially movable and ratchet-and-pawl mechanism is provided for holding it comprising a ring of crown ratchet teeth a pivoted pawl-member is provided to engage the ratchet teeth and the pawl-member is provided with a striking portion so located that a blow upon the striking portion will serve to disengage the pawl from the ratchet teeth. 100

8. A goods handling apparatus as claimed in claim 2 or claim 3 appended to claim 2, wherein the winch drum carries peripheral ratchet teeth, a pivoted pawl-member is provided to engage the ratchet teeth and the pawl-member is provided with a striking portion so located that a blow upon the striking portion will serve to disengage the pawl from the ratchet teeth. 105

9. A goods handling apparatus as claimed in claim 2 or in any of claims 3 to 5 is appended to claim 2, or in any of claims 6 to 8, wherein the cables or chains co-operate with guiding means on the platform or cover, which guiding means are so disposed that when not employed for pulling the cover on to goods stacked on the platform, the chains or cables can be employed for securing the cover directly to the platform. 110

10. A goods handling apparatus for the transit of goods substantially as described with reference to and shown in Figures 1 to 3 of 120

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the accompanying drawings and having a winch substantially as described with reference to Figures 4 and 5 or Figure 6 of the accompanying drawings.

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PROVISIONAL SPECIFICATION

No. 10540 A.D. 1951.

Improvements in or relating to Load Platforms for the Transport of Goods

5 We, JOHN REGINALD SHARP, a British Subject, and EMMANUEL KAYE, a British Subject, both of Kingsclere Road, Basingstoke, Hampshire, do hereby declare this invention to be described in the following statement:—

10 This invention comprises improvements in or relating to load platforms for the transport of goods. It is an object of the invention to provide means for rapidly and safely packing goods for transport which will save the provision of crates, will readily co-operate with fork-lifting-trucks and can be used over and over again.

15 According to the present invention a stillage pallet or like platform is provided with a cover to overlie the goods which are stacked upon it, and the cover is connected to the platform by a collapsible frame comprising means to draw the cover downwards and thereby to clamp goods stacked on the platform between the cover and the platform.

20 In a preferred form of the apparatus a stillage and cover are made of a light metal alloy. The collapsible frame may consist of two pairs of toggle links on each side of the stillage with means to draw the joints of the toggle links towards one another in order to collapse the cover on to the goods. When straightened, the toggle links hold the cover up so that the goods can be stacked, when drawn together they clamp the cover on to the goods, and when the goods have been removed they permit the cover to be lowered on to the stillage so that little space is occupied by the whole construction when it is returned empty.

40 The following is a description by way of example of one construction in accordance with the invention:—

45 A stillage is provided consisting of a light alloy casting which forms a surrounding frame cast in one piece with a ribbed floor. The ribs of the floor divide it into a number of rectangular cells and they project upwardly from the floor but do not rise so high as the upper edge of the surrounding frame, which affords a rectangular rim. Across the support afforded by the ribs may be secured, for example by welding a thin sheet of light alloy metal which forms the actual surface on which the goods are intended to rest. The thin sheet of light alloy metal and the cast ribbed

structure form between them a cellular structure of great stiffness and strength without necessitating the use of large quantities of metal or complicated manufacturing processes.

60 To the underside of the floor thus creased there are secured two cast light-alloy skids. Each skid is flat for the greater part of its length where it rests upon the ground, having a broad flange to afford a good bearing surface. The skid above the flange has three upstanding portions which are directly secured to the underside of the floor, for example by bolting so that the skids may be easily renewed, and in between these three upstanding portions there are large openings suitable for the admission of the forks of a fork-lift or pallet truck. The space between the two skids is also wide enough to admit the entry of the forks in a direction at right angles to that afforded by the spaces between the upstanding portions of the skid, and thus four-way entry for the lifting-forks is provided for. Moreover, the skids are spaced inwardly from the edge of the platform so that a lifting rope or chain may be conveniently passed round the edges.

80 Along the sides of the floor casting of the stillage, that is to say along the sides which are parallel with the skids, the floor casting is extended to afford two channels which are intended to house a collapsible toggle framework when it is folded.

85 A cover is provided consisting of a light alloy casting, and of the same size as the floor casting as viewed in plan. This is ribbed for stiffness and all round is provided with a down-turned edge of the same internal dimensions as the upstanding frame portion of the floor casting. Goods, in cartons or bales, which are stood on the floor of the stillage within the frame will therefore also come within the rim of the cover if the latter is lowered on to them. Along two sides of the cover it is extended with a further down-turned flange, forming between the flange and the rim a cover-channel which overlies the channels at the side of the floor. The cover casting is provided, at four points in the ribs which stiffen it, with upstanding ears to receive sling-hooks from a crane or other lifting device.

100 Pivoted within the side channels of the floor

at each corner thereof is a rectangular bar which forms part of the collapsible frame connecting the cover to the floor. Similarly, pivoted within the side channels of the cover on the corners of the cover are four bars also forming part of the collapsible frame. The bars pivoted to the cover and the bars pivoted to the floor are joined together at their free ends and the joints are each formed as a knuckle joint, which permit them to be brought into line with one another like a toggle so that they form four struts holding the cover up at the four corners. The knuckle joints can be broken by bending the toggles inwards and a tension device unites the two struts on one side to one another at the knuckle joints. A similar tension device unites the two struts on the other side.

With the struts straight and the cover supported, goods can easily be packed on the floor of the stillage. When the stacking of the goods has been completed the knuckle joints can be broken so that the toggles collapse towards one another allowing the cover to rest upon the goods. Then by applying tension between the knuckle joints by the tensioning devices the cover drawn firmly down upon the goods, locking them in place, after which the whole is ready for transport. Release of the tension device frees the goods instantly and when they have been removed the cover can collapse on to the floor, the toggle members on each side of the stillage collapsing into the spaces provided by the side channels of the floor and the cover. Any desired form of

strap or hook device can be provided for holding the cover down on to the floor under these conditions.

The tension device may be any desired; for example it may merely consist of a length of cord passing through eyes on the struts and suitably secured, or it may consist of a chain with a toggle shortening device, or yet a left and right handed screw-thread tensioner. Preferably, the two toggles which it connects together are each made with one link of the strut a little shorter than the other and the shorter link is put on the bottom at one corner and on the top at the other corner. This makes the two toggles fold automatically one above the other when the frame is collapsed. Preferably, the pivots of the toggles to the floor casting comprise tubular spindles which pass across the ends of the casting from side to side and unite the lower struts on one side to the lower struts on the other. Similarly, the upper halves of the struts where they are pivoted in the cover may be united together by tubular spindles. The effect is to ensure that the two sides of the cover lift equally and simultaneously, which is a convenience in use when there are not more than one or two operatives present. The skids are made broad enough to support the stillage effectively, even on soft ground or loose sand, and they facilitate hauling it about under such conditions.

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PROVISIONAL SPECIFICATION

No. 20873 A.D. 1951

Improvements in or relating to Load Platforms for the Transport of Goods

We, JOHN REGINALD SHARP, a British Subject, and EMMANUEL KAYE, a British Subject, both of Kingsclere Road, Basingstoke, Hampshire, do hereby declare this invention to be described in the following statement:—

This invention comprises improvements in or relating to load platforms for the transport of goods. It is an object of the invention to provide means for rapidly and safely packing goods for transport which will save the provision of crates, will readily co-operate with fork-lifting-trucks and can be used over and over again.

The present invention is cognate with that described in British Patent Application No. 10540/51. In that Specification there is described a stillage pallet or like platform which is provided with a cover to overlid the goods which are stacked upon it, the cover being connected to the platform by a collapsible frame comprising means to draw the cover

downwards and thereby to clamp goods stacked on the platform between the cover and the platform.

According to the present invention the means to draw the cover downwards comprises, instead of the link-work which is described in the aforesaid Application, a flexible chain or cable, guide means for attaching the cable to the cover and to the platform, and means for winding-up the cable. This has the same effect as the collapsible frame but is lighter and simpler.

Furthermore, the construction of the platform and of the cover instead of being of a light metal alloy as described in the aforesaid Cognate Patent Application is preferably of light-section metal members welded together at their junctions with one another.

A further feature of the invention relates to the fact that the cover is provided with means to support another platform so that a

number of platforms, when loaded with goods fastened down by the covers can be stood one on top of another.

The following is a description by way of example of one construction in accordance with the invention:—

A platform is provided by forming a frame of steel-angle members welded together at the corners, each with one flange of the angle upright and the other flange horizontal and directed inwards. Across the frame from side to side at intervals there are welded cross-members which rest on the horizontal flanges of the angles. The cross members may be made from a smaller section of angle-iron or T-iron. Over these cross-members or bearers there is welded a sheet metal floor the upper surface of which is on a lower level than the edges of the peripheral frame. Below the frame there are secured two runners. Each runner is made of a piece of flat-section steel which is bent up at the ends and is long enough for the bent up ends to be welded to the underside of the frame of the platform. The horizontal portion of the runner between the bent up ends is stiffened by creasing the runner upwards in the centre and is further stiffened by a support in the centre extending from the underside of the platform to the ridge formed by the crease in the runner. This support may consist of a vertical piece of steel sheet. Additional supports may be provided in the form of columns near each end of the runner the columns extending from the underside of the platform to the upper side of the runner. It will be observed that by the described construction there is a space between the runner and the underside of the platform divided into two by the central support. This space is made large enough to accommodate the fork-arms of a fork-lifting-truck. The fork of the lifting-truck may also be entered beneath the platform from the ends, that is to say between the runners longitudinally. Thus this construction affords what is known as "four-way entry."

The platform is intended primarily for the carriage of ammunition boxes and is made of such dimensions as to accommodate four rows of three boxes each, side by side. On these boxes there may be staked a second tier of four rows of three boxes and above this a third tier.

According to the present invention if ammunition boxes or other goods are stowed on such a platform all round the frame and a deep peripheral flange projecting inwardly, in order to prevent displacement during transit a cover is provided above the goods. This cover consists of a light frame made of angle-shaped members with a narrow horizontal flange projecting inwardly. The frame is made of such dimensions as to embrace and fit upon the upper tier of boxes. Within the frame from side to side there extend three cross-members.

Each cross-member is made of sheet metal—the side edges of which are bent upwardly to stiffen it. The two outer cross-members are set at such a distance apart from one another that if a second platform is loaded on to them the cross-members of the cover of the lower platform will fit below and be suitable to receive and support the runners of the upper platform. At four points two along each of two opposite edges there are welded to the frame of the cover metal eyes which are large enough to embrace the hooks of a crane-sling. These eyes can conveniently be formed by welding to the frame inverted U-shaped pieces of steel bar.

Outside the frame at each end there are welded fittings for the attachment of wire cables intended to draw the cover down on the goods supported by the platform. The platform also has fittings for the passage of cables and the principle is to thread the wire cable up and down around the fittings between the cover and the platform and then to tighten it so as to draw the cover downwards by means of some form of winding-up gear.

To this end on one end of the cover there is secured a fixture to receive one end of the wire cable. Below it on the platform there is a guide or bollard round which the cable from the fixture on the cover can be led. A second bollard near the opposite end of the same side of the platform is provided and the cable is led round this, up to a bollard on the cover and thence horizontally to a winding-up apparatus or winch located on the middle of the side of the cover. Between two bollards on the platform the cable passes through an eye on the platform made by welding a U-shaped piece of metal to the upright flange of the angle-iron of the platform. The end of the cable which enters the winch is provided with a ball or head to fit into a recess provided for it on a small winch drum. Therefore after the cable has been threaded round the bollards the head on the cable can be inserted into the winch drum after which if the winch is operated the cable is tightened and the cover drawn down firmly upon the goods on the platform. An exactly similar cable gear is provided at the other end of the cover on the platform and by tightening two winches the whole is rapidly and firmly secured together. It should be pointed out that to release the goods all that is necessary is to unwind the cable from the winch and detach the head on the cable from the winch drum. This head is made large enough to prevent it passing through the eye on the platform between the bollards and therefore the cover although loose and easily lifted off the goods on the platform is still attached to the platform by the cable and cannot be lost.

Various constructions of winch can be provided. In one form there is a small winch

drum which is integral with a head carrying a tommy-bar. The winch drum is also integral with two ratchet wheels which form the sides of the winch drum and it rotates on a stub axle welded to the end of the cover. A pawl is provided to engage the ratchet teeth and the drum can be wound-up by operating the tommy-bar. The pawl is preferably made such that it can be released by striking it a blow, because the importance of release under service conditions even if the parts constituting it become jammed, is very great. Preferably the winch drum over-hangs the end of the stub axle and the tommy-bar is a permanent fixture in the drum.

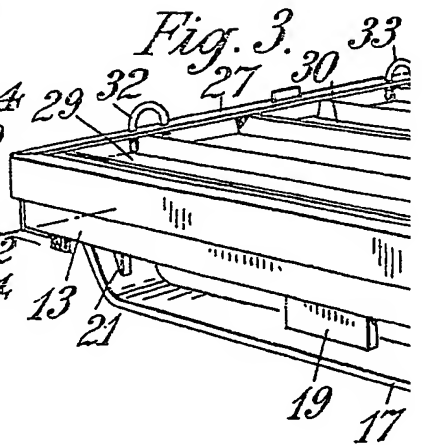
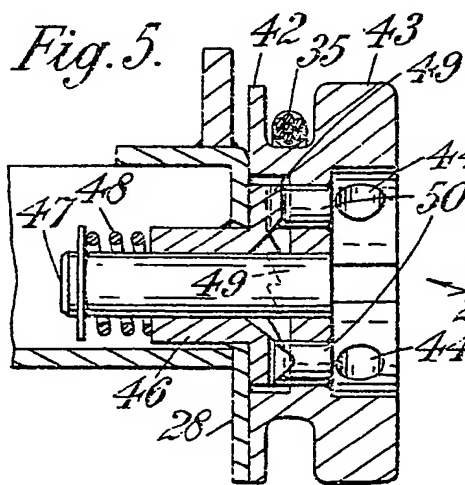
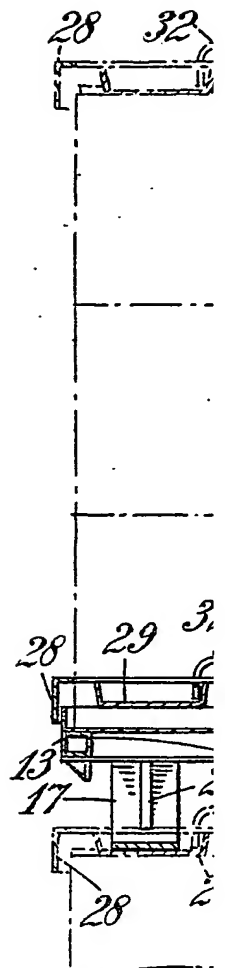
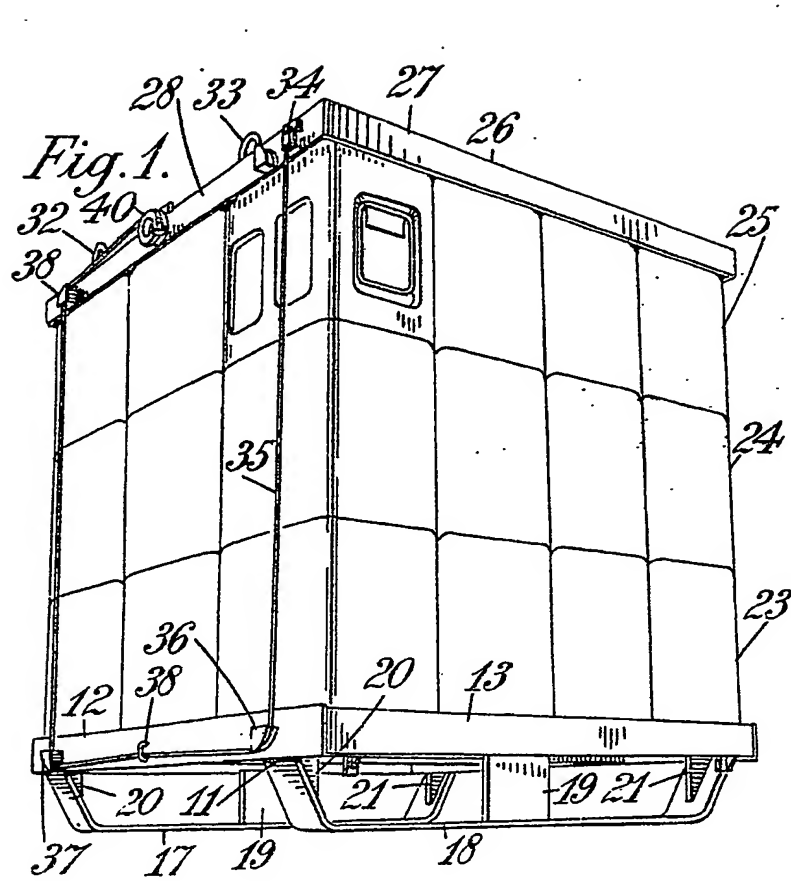
In an alternative construction the ratchet teeth are formed as crown teeth and are carried on the frame of the cover. The winch-drum with its tommy-bar is mounted so as to be axially movable on the stub axle, which is concentric with the stationary ratchet teeth and the winch carries two pawl members to engage diametrically opposite teeth on the

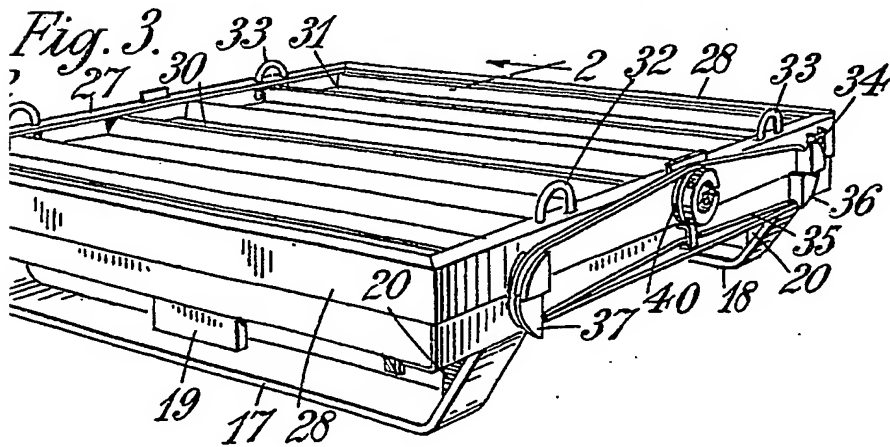
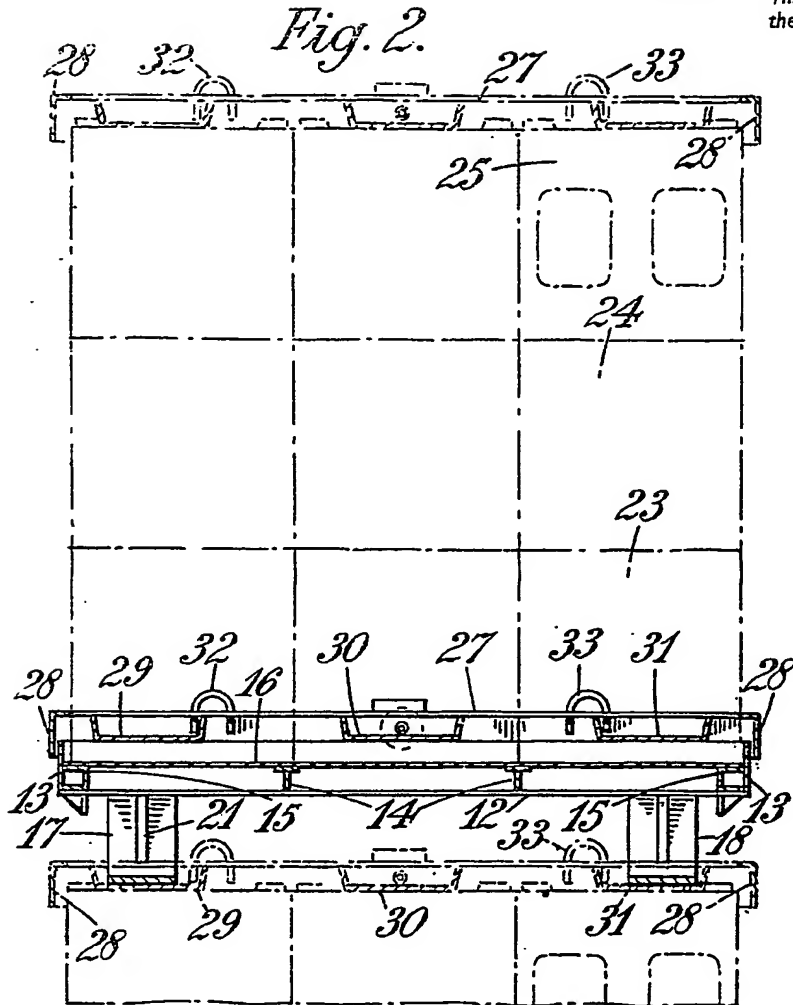
ratchet. In this case the winch can be disengaged by moving it axially outwards instead of by operating a hinged pawl.

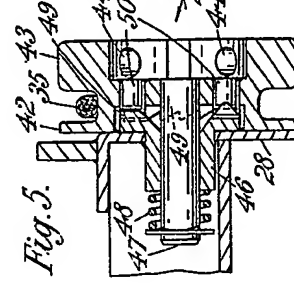
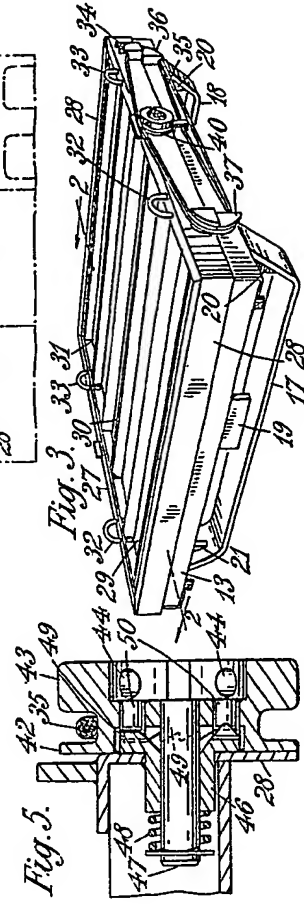
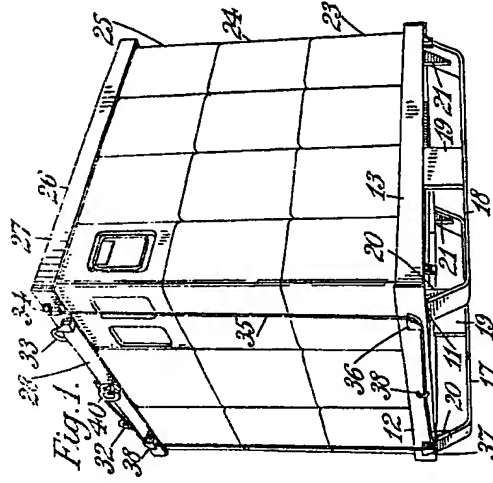
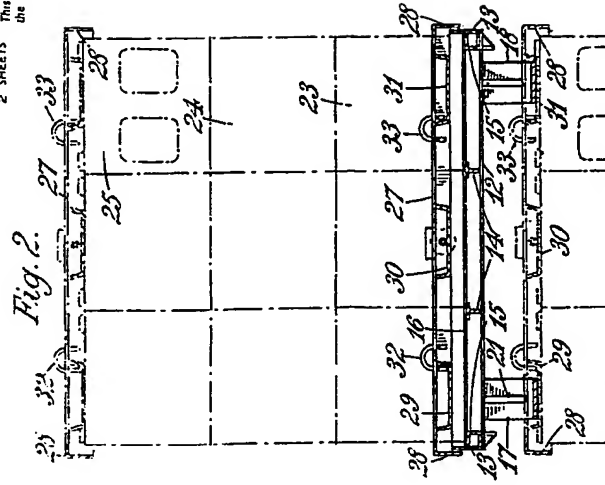
When a pile of ammunition boxes has been unloaded from a platform such as that just described it is desirable to be able with convenience to return the platform and cover to base. The construction described lends itself readily to this. As already pointed out, the cover cannot become detached from the platform as the cables are fastened at each end, one end to the platform and the other end to the cover. It is, however, undesirable to have platforms and covers riding loose when empty. With the construction described however, all that is necessary is to place the cover directly on the platform and wind the cable in place, taking two turns round each bollard instead of one and then tightening up again by the winch.

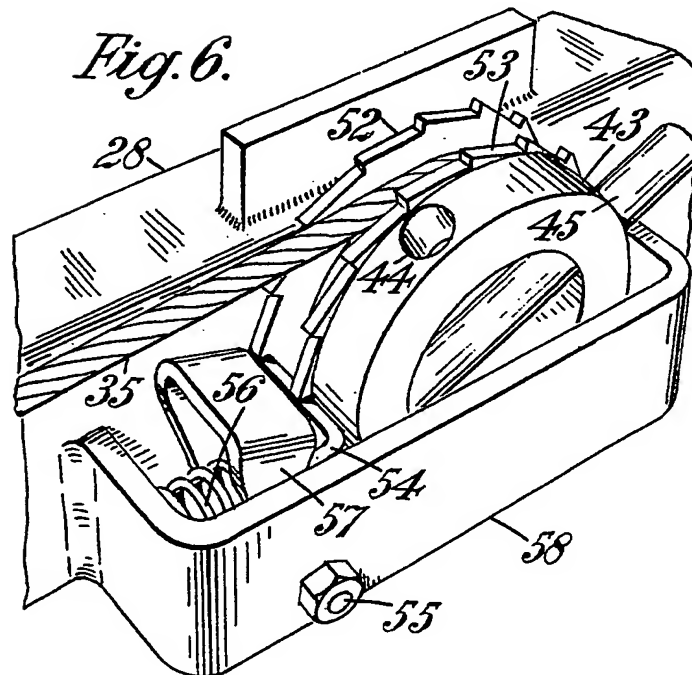
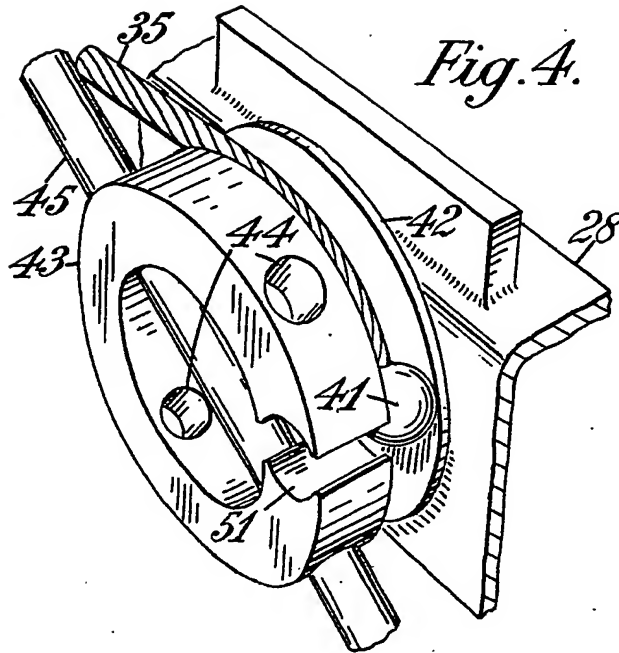
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